

ORIGINAL



SDMS DocID

2241232

DESIGN REPORT
FOR
12TH STREET LANDFILL SITE
WILMINGTON, DELAWARE

MAY 2000

Prepared By:

ROY F. WESTON, INC.
1400 Weston Way
West Chester, PA 19380

1.0 BACKGROUND

ORIGINAL

1.1 Site Description

The 12th Street Landfill Site is located in an industrial area on 12th Street, west of the Interstate 495 12th Street ramp, near Gander Hill Prison in Wilmington, New Castle County, Delaware. The site is bordered to the west by Brandywine Creek, to the north by Asset Recovery Services, and to the east and south by Norfolk & Southern railroad track and State of Delaware owned land.

The site is covered by relatively thick vegetation consisting of tall phragmite and an area along the creek bank of deciduous trees. Based on the New Castle County, Delaware Soil Survey (U.S. Department of Agriculture Soil Conservation Service), the site soils are characterized as being in the Othello-Falsington-Urban (Ou) land complex. These types of soils are typically poorly drained and are usually classified in either hydrologic soil Group C or D.

The area of concern (AOC) depicted on the drawings was utilized as an unauthorized dump site, in which at least fourteen 55-gallon drums, rubber hoses, slag, and a light colored ash-like material were disposed of on the property. Two drum cluster areas were identified. One drum cluster area is located in the northwest portion of the AOC adjacent to the Brandywine Creek. The second cluster area is located in the southern portion of the AOC.

The majority of the site is relatively flat, with an average elevation of approximately ten feet above sea level. The Brandywine Creek, which borders the west portion of the 12th Street Site approximately ½ mile upstream of its confluence with the Christina River, is tidally influenced in this area. The mean tide in the area is about 2.84 feet, with a mean range between high and low tide of 5.30 feet. Mean Higher High Water (MHHW) in the area is approximately 5.78 feet. The 100-year flood elevation for this area of the Brandywine Creek is 10.0 feet, based on the Flood Insurance Study for New Castle County, Delaware (FEMA).

1.2 Regulatory History

During June 1999, Delaware Department of Natural Resources and Environmental Control (DNREC) personnel conducted a site visit as part of a Brownfields Site Assessment Investigation for the eastern side of the Brandywine Creek, along 12th Street. During this site visit, DNREC collected surface soil samples on the site.

In July 1999, the EPA was notified by DNREC to investigate what appeared to be drums containing hazardous materials at the site.

In late August and early September 1999, U.S. EPA's OSC began conducting a removal assessment of the property to determine if further federal actions were warranted at the 12th Street Landfill Site.

1.3 Site Sampling and Analytical Results

During January and February 2000, additional samples were collected at designated locations at the 12th Street Landfill Site. The soil samples were analyzed for 14-day acute test on earthworms (bio-assay parameter), as well as TAL metals, TCL semivolatiles, and pesticides/polychlorinated biphenyls (PCBs).

Sampling results indicated that, in certain sample locations, the compounds of lead, arsenic, chromium, and iron were detected in levels that exceeded Industrial Soil Risk-Based Concentrations (RBC) exceedances. (Lead and arsenic were found to be the more prevalent compounds detected.)

Results of the evaluation of soil sample toxicity to the earthworm indicated a degree of increasing mortality occurring in those locations with elevated levels of arsenic and chromium. Other compounds did not statistically influence survival rates.

2.0 TECHNICAL REMEDIAL APPROACH

ORIGINAL

Following a review of the analytical results and consultation with EPA's ecological risk assessment personnel and WESTON, EPA will approve a cap cover system for the AOC and adjacent areas. Remediation will first involve a graded cut-back of the existing shoreline embankment (currently at an approximately 1:1 [horizontal to vertical] inclination) to a more stable (2:1 or flatter) slope which will better facilitate placement and the long-term integrity of the cap/cover system. Excavated materials will be placed and consolidated primarily over the AOC and areas immediately adjacent before being covered with the cap cover system. Prior to initiating the graded cut-back, a sheet pile wall or other possible alternative type of barrier system will be placed along portions of the mud flat area, downgradient of the shoreline embankment, which will inhibit tidal inundation of the area during the remediation. This barrier will also inhibit the potential migration of sediments into the Brandywine Creek resulting from grading activities.

Following placement, the cap/cover system for the shoreline embankment will be stabilized with appropriate vegetative cover, where practicable and also provided with structural stabilization measures (e.g., rip rap or articulated concrete block, etc.) where necessary.

3.0 EROSION AND SEDIMENT CONTROL

The Erosion and Sediment Control Plan for the 12th Street Landfill Site will be implemented in two (2) phases. The first phase (Phase I) will allow for the construction of the site access and haul road(s), the gravel trailer/laydown/staging areas, and soil stockpile areas. This phase will involve the installation of a stabilized construction entrance, sediment barriers (silt fencing), and a sediment trap as the primary erosion control measures. These controls will be located as shown on the Drawings and placed prior to the initiation of construction for the site roads, trailer/staging/laydown and soil stockpile areas.

The sediment trap shown on the Drawings has been located so as to accommodate what is deemed to be the largest possible tributary area of disturbed site acreage, while still being set at a

high enough elevation to minimize tidal inundation into the trap from the Brandywine Creek. The sediment trap has been sized to provide sediment storage of 3,600 cubic feet per tributary acre of drainage area in accordance with DNREC design standards. The tributary area for the sediment trap is approximately 3.5 acres.

The Phase II Erosion and Sediment Control Plan will be implemented to address the graded cut-back of the shoreline embankment area, placement and consolidation of excavated materials, as well as placement of the cap and cover system. During this phase, the sheetpile wall (or other barrier system) will be installed prior to initiating the shoreline cut-back. In addition, as much of the disturbed area as possible will be diverted into the sediment trap. Following cap and cover system placement, the area will be either vegetatively or structurally (e.g., rip rap articulated concrete block, etc.) stabilized, as appropriate.

4.0 STORMWATER MANAGEMENT

DNREC stormwater management standards require that post-development peak rates of discharge not exceed the pre-development peak rates for the two (2) year, ten (10) year and the 100 year frequency storm events for projects located in this portion of New Castle County.

However, for the two following reasons, a waiver of these requirements is requested for the remedial work associated with the 12th Street Landfill Site:

1. The site is located adjacent to the Brandywine Creek where the 100-year flood elevation is 10.0 feet and the 10-year flood elevation is 7.2 feet, based on the Flood Insurance Study for New Castle County, Delaware (FEMA – August 1998). These flood elevations show that a stormwater management basin (which would be located in the area of the site where the sediment trap is now shown) would be inundated during these frequency storm events. In addition, basin discharge during these storm events would be ineffectual.

- Original
Not
2. The proposed site features shown on the Drawings are primarily temporary. permanent paving or structures are to remain on the site following construction, with the exception of potential revetment type stabilization structures associated with the Brandywine Creek shoreline embankment.

During Phase II, a channel or diversion will be required to convey runoff along the east side of the AOC to the sediment trap. This diversion and/or channel will be designed to convey the peak rate of runoff from a 25-year, 24 hour frequency storm event. Appropriate channel linings will be selected in accordance with DNREC standards depending on calculated flow velocities.

ORIGINAL

12th STREET LANDFILL SITE
WILMINGTON, NEW CASTLE COUNTY
SEDIMENT TRAP CALCULATIONS

ORIGINAL

12th STREET LANDFILL SITE
WILMINGTON, NEW CASTLE COUNTY
SEDIMENT TRAP CALCULATIONS

CLIENT/SUBJECT EPA - 12th Street LANDFILL SITE

W.O. NO.

Original

TASK DESCRIPTION

TASK NO.

PREPARED BY (b) (4) DEPT 1382 DATE 5/19/00

APPROVED BY

MATH CHECK BY DEPT DATE

METHOD REV. BY DEPT DATE

DEPT DATE

SIZE THE PROPOSED SEDIMENT TRAP IN ACCORDANCE WITH DNREC DESIGN STANDARDS

FROM PLAN DRAWING, CONTRIBUTING AREA TO SEDIMENT TRAP IS ESTIMATED TO BE 3.5 ACRES.

FROM DNREC DESIGN STANDARDS FOR A STONE OUTLET SEDIMENT TRAP, A SEDIMENT STORAGE VOLUME OF 3600 CF/ACRE OF CONTRIBUTING DRAINAGE AREA MUST BE PROVIDED. (THIS VOLUME SHOULD BE EXCAVATED BELOW THE ELEVATION OF THE BOTTOM OF THE STONE OUTLET BERM. IN THIS CASE, FOR THE PROPOSED TRAP, THAT ELEVATION IS 4.0).

REQUIRED STORAGE VOLUME = $3.5 \text{ AC.} \times 3600 \text{ CF/AC}$
(EXCAVATED BELOW EL. 4.0)

REQUIRED STORAGE VOLUME = 12,600 FT³

DETERMINE SEDIMENT TRAP STORAGE PROVIDED

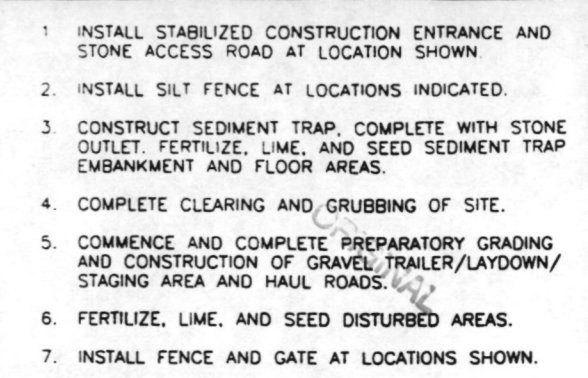
FROM PLAN DRAWING 2001,

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. PROVIDED (CF)
2.5	8570			
		9285	1.5	13,900
4.0	10,000			

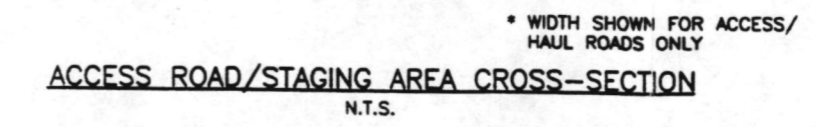
→ VOL. PROVIDED = 13,900 CF > 12,600 CF

REQ'D

OK







ESTIMATED BORROW MATERIAL-PHASE I
1350 CY COARSE AGGREGATE

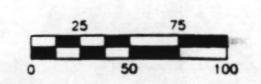


APPLICANT'S CERTIFICATION:

I, _____, CERTIFY THAT ALL
(APPLICANT)

LAND CLEARING, CONSTRUCTION, AND
DEVELOPMENT SHALL BE DONE PURSUANT
TO THE APPROVED PLAN.

- ### LEGEND
- | | |
|---|----------------------------------|
| — 10 — | EXISTING CONTOUR |
| — 6 — | PROPOSED CONTOUR |
| — SF — | SILT FENCE |
|  | RCD
ROCK CHECK DAM |
| — LD — | LIMIT OF DISTURBANCE (PHASE I) |
|  | STABILIZED CONSTRUCTION ENTRANCE |
|  | GRAVEL ROAD/STAGING AREA |
| — X — | CONSTRUCTION FENCE |
|  | SURFACE FLOW DIRECTIONAL ARROW |



										U.S. ENVIRONMENTAL PROTECTION AGENCY 12th STREET LANDFILL SITE WILMINGTON DELAWARE										<div>CHECKED</div> <div>DES. ENG.</div> <div>PROJ. ENG.</div> <div>PROJ. MGR.</div> <div>APPROVED</div> <div>APPROVED</div>				<div>DATE</div> <div>CLIENT APPROVALS</div> <div>DATE</div>				<div>WILLIAM A. ZAHN</div> <div>REGISTERED</div> <div>10716</div> <div>DELAWARE</div> <div>PROFESSIONAL ENGINEER</div>				SITE GRADING, EROSION AND SEDIMENTATION CONTROL PLAN PHASE I									
<div>< DATE APPR.</div> <div>REVISION</div>										<div>< DATE APPR.</div> <div>REVISION</div>										WEST CHESTER PENNSYLVANIA				<div>WESTON</div> <div>MANAGERS</div> <div>DESIGNERS/CONSULTANTS</div>				<div>DRIVER</div> <div>JCT</div> <div>DATE</div> <div>5/11/00</div> <div>DWG. NO.</div> <div>2001</div>				<div>SCALE</div> <div>1"=50'-0"</div> <div>W.G. NO.</div> <div>20101.252.003</div> <div>SHT.</div> <div>OF</div>									